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ANNUAL SURVEY REPORT
PMA 1979-1980

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Foreword

The Pharmaceutical Manufacturers Association (PMA) is a non-profit trade association representing 149 members firms. These firms produce most of the ethical pharmaceuticals in the United States and a substantial portion of the world supply. Many also manufacture medical devices and diagnostic products.

This 20th Annual Survey Report is designed to provide a variety of information on these industries to business executives, financial analysts, educators, and other interested groups. PMA expresses its appreciation to member firms for supplying the information on which the report is based.

Survey questions are periodically updated and the scope of the survey expanded or reduced to reflect changing priorities, however, an effort is made to maintain continuity. Comparisons among surveys can be made in most categories.

Responses to surveys are reasonably uniform and consistent. There are minor variations, however, from year to year. To compensate for these, adjustments are made based on supplementary data available to PMA from other sources.

Some survey responses are "collective" responses, due to the nature of the membership of the Association. This means that a parent firm provides data on relevant operations for all its cor-

porate divisions and subsidiaries. Most of these "multiple members" are identifiable in their own right and generally appear on the PMA membership list. In presenting data in the report, responses are expressed in terms of "companies" or corporate entities. Each response or "company" may represent one or more PMA members or related firms.

Although this is a membership survey, nonmember firms are represented in selected operational totals by estimate, based on data obtained from other sources. For example, aggregated human-dosage form drug sales have been extrapolated to represent the entire industry. However, extrapolation has not been applied to bulk sales, veterinary use pharmaceuticals, foreign data or R&D.

No adjustment has been made for inflation; data are presented in current dollars for manufacturers' sales and R&D expenditures. It should be noted that prescription pharmaceutical prices, at manufacturers' levels as well as retail, in contrast to most other product prices in the U.S. economy, have remained relatively stable for many years. The producer price index (1967 = 100) for ethical pharmaceuticals in 1979 was 141.2 (in contrast to 235.3 for "all commodities"). Thus sales–dollar trends provide a closer representation of expansion in physical product volume for pharmaceuticals than for most other industries where there has been substantial inflation.

TRENDS

1979-1980 Pharmaceutical Industry Operations

- Global Sales, Ethical Pharmaceuticals, Human and Veterinary Use:
  1979 $19.6 billion, up 15% from 1978
  1980 $21.9 billion (estimated), up 12% from 1979
- U.S. Sales, Human Use, Dosage Form Pharmaceuticals:
  1979 $10 billion, up 10% from 1978
  1980 $11 billion (estimated), up 10% from 1979
- Global R&D expenditures for Human and Veterinary Use Pharmaceuticals:
  1979 $1.6 billion, up 16% from 1978
  1980 $1.9 billion (budgeted), up 16% from 1979

Table 1

U.S. Headquartered Firms' Sales and R & D Expenditures, 1954-1980 (millions of dollars)

1

Year	U.S. Sales[a]	Global Sales Human and Veterinary[b]		Global R & D[c]
	Human Dosage	*Dosage Only*	*Dosage & Bulk*	*Human & Veterinary*
1980[d]	11,069	20,683	21,924	1,892
1979	10,044	18,422	19,572	1,627
1978	9,156	16,040	17,008	1,404
1977	8,233	13,896	14,674	1,276
1976	7,669	12,832	13,572	1,164
1975	6,895	11,543	12,183	1,062
1974	6,083	10,120	10,726	942
1973	5,507	8,755	9,191	825
1972	5,018	7,827	8,181	726
1971	4,667	7,020	7,838	684
1970	4,322	6,442	6,853	619
1969	4,008	5,832	6,208	550
1968	3,655	5,280	5,665	495
1967	3,226	4,707	5,102	461
1966	3,011	4,256	4,660	416
1965	2,779	3,841	4,219	365
1964	2,479	3,405	3,717	310
1963	2,317	3,152	3,469	292
1962	2,199	2,932	3,236	259
1961	1,954	2,685	2,992	245
1960	1,905	3,600	na	212
1959	1,850	2,500	na	197
1958	1,802	2,400	na	170
1957	1,742	2,200	na	127
1956	1,676	1,900	na	105
1955	1,457	1,650	na	91
1954	1,252	1,500	na	78

[a] U.S. sales of finished prescription and "otc ethical dosage forms."

[b] Global sales are defined to include total ethical pharmaceutical sales within the United States, exports to nonaffiliated firms and sales abroad of U.S. affiliates.

[c] Global R & D includes all ethical pharmaceutical research and development financed or conducted by U.S. pharmaceutical companies in the U.S. and abroad, and in the U.S. only by U.S. based subsidiaries of foreign owned firms.

[d] PMA estimates based on member company budgeted figures or estimates.

Source: PMA Annual Surveys.

SALES

1979 Sales in the United States and Abroad

- U.S. sales volume rose 11%; foreign sales volume rose 21%
- U.S. sales accounted for 56% of volume for U.S. based manufacturers; foreign sales accounted for 44%
- Human use dosage forms constitute 90% of all sales, U.S. and foreign
- Exports amounted to $1,155 million, up 8%

Tables 2 and 3

Ethical Pharmaceuticals Sales Growth, 1978-1979
(millions of dollars) **2**

Year	Domestic Sales	Percent Change	Foreign Sales	Percent Change	Total	Percent Change
1978 . .	$ 9,916.9		$7,091.0		$17,007.9	
1979 . .	$11,007.3	+11.0%	$8,564.8	+21.0%	$19,572.1	+15.1%

1979 Sales by Dosage Form

- Prescription drugs accounted for 79% of U.S. sales in the human use, dosage form category; over-the-counter ethical products accounted for 16%; and the remainder came from sales of biologicals, diagnostics and other products.
- Government sales of ethical pharmaceuticals constituted 8% of the total; 82% of this sum was for prescription drugs.

Table 4

Domestic Sales of Dosage Form, Human Use Ethical Pharmaceuticals, 1979 (millions of dollars) **4**

Dosage Form Human Use	To Private Sector	To Government	Total Domestic Sales
Prescription Legend[a]	$7,167.8	$618.4	$7,786.2 (79.1%)
Over-the-Counter Ethical[b]	1,483.7	60.0	1,543.7 (15.7%)
Biologicals[c]	216.4	45.6	262.0 (2.6%)
Diagnostic Products[d]	101.5	12.9	114.4 (1.2%)
Other	124.9	16.4	141.3 (1.4%)
Total, Dosage Form, Human Use	$9,094.3	$753.3	9,847.6 (100.0%)

[a] *Prescription Legend*—A drug product which by Federal law is available only by prescription by a licensed physician.

[b] *Over-the-Counter Ethical*—A drug product sold over the counter but primarily promoted to the professions.

[c] *Biologicals*—Bacterial and virus vaccine, antigens, antitoxins, toxoids, and analogous products (such as allergenic extracts), serums, plasmas, and other blood derivatives for human use.

[d] Dosage form, *diagnostic agents* for *in-vivo* use.

1979 Sales by Geographic Area

- Europe accounted for 49% of foreign sales; Latin America 20%, the Far East 17%, and the rest of the world the remaining 14%.

Table 5

Distribution of Foreign Sales* by Geographic Area, 1979 **5**

Area	Percentage of Total Foreign Sales
Canada	6.1%
Latin American (Central America, South America, excluding Cuba)	20.3
Western Europe (excluding Turkey, Yugoslavia and Albania; including Greece and Scandinavia)	48.5
Middle East and Africa	6.8
Far East and Pacific (from Pakistan to Pacific Islands, from Japan to New Zealand)	17.3
Socialist Bloc (including Eastern Europe, U.S.S.R., Yugoslavia, Albania, People's Republic of China, Laos, Cambodia and Vietnam)	1.0
TOTAL	100.0%

*Sales made abroad, only. Exports are excluded.

1979 Sales by Class of Customer

- Sales to wholesalers were up again, but sales to retailers and Federal hospitals as a percent of the total were down.
- Total hospital sales remained about the same, 22.6% in 1978, and 21.2% in 1979.

Tables 6 and 7

Ethical Pharmaceuticals Manufacturers' Direct Human Use Dosage Form Sales, in the United States, 1978-1979 (millions of dollars)

6

Class of Customer	Sales 1978	Market Share 1978	Sales 1979	Market Share 1979
Wholesalers	$4,705.9	51.4%	$ 5,323.5	53.0%
Retailers	2,087.5	22.8	2,260.0	22.5
Private Hospitals	1,464.9	16.0	1,496.6	14.9
State and Local Government Hospitals	384.5	4.2	401.8	4.0
Federal Hospitals	219.7	2.4	231.0	2.3
Other Federal Government	128.2	1.4	140.6	1.4
Practitioners	109.9	1.2	120.5	1.2
Manufacturers, Repackagers and Other Direct Sales	54.9	.6	70.3	.7
TOTAL	$9,155.5	100.0%	$10,044.3	100.0%

Ethical Pharmaceuticals Manufacturers' Direct Human Use Dosage Form Sales in the United States by Class of Customer, 1969-79 (odd years, percentage share of sales)

7

Class of Customer	1969	1971	1973	1975	1977	1979
Wholesalers	47.6%	46.4%	44.9%	46.9%	49.1%	53.0%
Retailers	29.9	30.0	29.6	27.6	25.5	22.5
Private Hospitals	12.2	13.2	14.7	14.7	15.1	14.9
State and Local Government Hospitals	4.0	4.8	4.9	4.6	4.5	4.0
Federal Hospitals	2.9	2.8	2.9	2.6	2.7	2.3
Other Federal Government	1.0	.9	1.2	1.1	1.3	1.4
Practitioners	1.8	1.5	1.4	1.2	1.1	1.2
Manufacturers, Repackagers, and Other Direct Sales	.6	.4	.4	1.3	.7	.7
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Ethical Pharmaceutical Sales[a], Domestic and Foreign: Shares of End-Use Totals, 1979 (millions of dollars)

3

	Domestic U.S. Sales			Foreign Sales			Total	Sales for Export
	To Private Sector	To Governments	Total Domestic Sales	Exports to Other Firms	Sales Abroad[b]	Total Foreign Sales		Intra-Firm Transactions[c]
Dosage Form Human Use	$ 9,291.0 (52.7%)	$753.3 (4.3%)	$10,044.3 (57.0%)	$221.2 (1.2%)	$7,365.7 (41.8%)	$7,586.9 (43.0%)	$17,631.2 (100.0%)	$272.0
Dosage Form Veterinary Use	364.9 (46.1%)	2.3 (.3%)	367.2 (46.4%)	18.1 (2.3%)	405.7 (51.3%)	423.8 (53.6%)	791.0 (100.0%)	63.9
Bulk Human Use	317.1 (48.9%)	1.7 (.3%)	318.8 (49.2%)	111.4 (17.2%)	217.9 (33.6%)	329.3 (50.8%)	648.1 (100.0%)	410.9
Bulk Veterinary Use	277.0 (55.2%)		277.0 (55.2%)	5.7 (1.1%)	219.1 (43.7%)	224.8 (44.8%)	501.8 (100.0%)	51.6
TOTAL	$10,250.0 (52.3%)	$757.3 (3.9%)	$11,007.3 (56.2%)	$356.4 (1.8%)	$8,208.4 (42.0%)	$8,564.8 (43.8%)	$19,572.1 (100.0%)	$798.4

[a]Sales are before deducting cash discounts and other marketing expenses, but after returns and allowances (domestic returns and allowances totaled $283 million in 1979).

Export sales are f.o.b. U.S. port. Domestic sales figures are f.o.b. plant. In addition, transportation-out costs were $161 million and company branch or field warehousing $154 million.

[b]Sales abroad refers to sales in a foreign area by subsidiaries or other corporate operations and excludes U.S. export sales to other firms. Excluded also are sales outside the U.S. by foreign-owned firms that have subsidiaries in the U.S. as PMA member firms.

[c]Sales for Export Intra-Firm Transactions are sales to own International Division or for export to subsidiary abroad and are included as part of cost in Sales Abroad. Addition of the two export columns will provide aggregate ethical pharmaceutical exports.

1979 Sales by Product Class

- Products acting on the central nervous system continued to represent the largest product sales category, accounting for 26.2% of domestic dosage form sales.
- Other Product classes, in order of sales rank, were antiinfectives (16.6%), cardiovasculars (12.7%), neoplasms and endocrine (10.2%), vitamins and nutrients (10.1%), and gastrointestinal and genitourinary (10.0%).
- Over-the-counter ethicals constitute over one-third of the classes for vitamins, gastrointestinal and genitourinary, respiratory system and dermatological drugs.
- In foreign sales, anti-infectives are first, followed by drugs for the central nervous system and respiratory system. These three groups continued to account for over half of the sales abroad.

Tables 8 and 9

Foreign Sales by Product Class, Dosage Form Ethical Drugs for Human Use, 1978-1979[a] **9**

Product Class	Relative Share of Sales 1978	Relative Share of Sales 1979	% Change Dollar Sales 1978-1979[b]
Anti-Infectives	25.0%	25.0%	14.9%
Central Nervous System	14.4	14.5	15.0
Respiratory System	12.1	11.8	11.8
Gastrointestinal and Genitourinary	10.8	12.1	28.7
Neoplasms and Endocrine	10.1	10.1	14.6
Cardiovasculars	9.1	9.3	16.8
Vitamins and Nutrients	5.5	5.2	8.4
Dermatologicals	2.7	2.7	12.7
Biologicals	1.1	.9	- 4.8
Diagnostic Agents	.1	.1	- 9.5
Other Pharmaceutical Preparations	9.1	8.3	4.4
	100.0%	100.0%	

[a] Same companies for 1978-1979, representing approximately 80 percent of foreign sales in 1979.

[b] Based on actual dollar sales.

R & D

1979 Research and Development

- Total R & D expenditures reached $1.6 billion, up 16% from 1978.
- 94% of company R & D funds were spent on human-use pharmaceuticals, and 6% on animal use.
- Government contracts increased from $7.0 to $7.6 million although a decline was predicted. Only $6.9 million was budgeted for 1980.

Table 10

R & D Expenditures for Ethical Pharmaceuticals: 1978, 1979 Actual and 1980 Budgeted PMA Member Firms (millions of dollars)

10

	1978 Actual	1979 Actual	1980 Budgeted
Company-Financed R & D Expenditures for Human-Use Pharmaceuticals:			
Amount spent in United States	$1,089.2	$1,243.1	$1,437.4
Within firm	929.3	1,078.2	1,232.6
Outside firm	159.9	164.9	204.8
Amount spent in foreign countries	222.0	279.8	337.2
Within firm	198.0	252.8	302.0
Outside firm	24.0	27.0	35.2
TOTAL Human-Use R & D	$1,311.2	$1,522.9	$1,774.6
Company-Financed R & D Expenditures for Veterinary-Use Pharmaceuticals:			
Amount spent in United States	$ 69.9	$ 76.7	$ 86.4
Within firm	62.3	69.3	79.0
Outside firm	7.6	7.4	7.4
Amount spent in foreign countries	15.9	19.6	23.8
Within firm	15.2	18.3	22.3
Outside firm	.7	1.3	1.5
TOTAL Veterinary R & D	$ 85.8	$ 96.3	$ 110.2
TOTAL Company-Financed R & D Pharmaceuticals	$1,397.0	$1,619.2	$1,884.8
U.S. Government Grants and Contracts for Company-Conducted Pharmaceutical R & D	$ 7.0	$ 7.6	$ 6.9
TOTAL Expenditures for Pharmaceutical R & D	$1,404.0	$1,626.8	$1,891.7

1979 Research and Development Expenditures Abroad

- There was a continued increase in R & D spending abroad, representing 18.5% of total expenditures. This compares with 17.0% in 1978.

Tables 11 and 12

1979 Research and Development Distribution of Expenditures

- The share of expenditures devoted to human use drug research continued to increase. Human use drug research accounted for 93.39% of total expenditures in 1978, 93.62% in 1979 and 93.80% in 1980 (budgeted).
- The share of expenditures for intramural research in the United States for human use drugs continued to decrease, with an offsetting increase in extramural research.

Table 13

Domestic Sales by Product Class, Dosage Form Ethical Drugs for Human Use, 1979 (millions of dollars)

8

Product Class	Prescription Drugs Sales	Prescription Drugs Market Share	Over-The-Counter Ethicals Sales	Over-The-Counter Ethicals Market Share	Total Sales	Total Market Share
Central Nervous System	$2,312.5	29.7%	$ 136.0	8.8%	$2,448.5	26.2%
Anti-Infectives	1,510.5	19.4	35.5	2.3	1,546.0	16.6
Gastrointestinal and Genitourinary	584.1*	7.5	339.6	22.0	923.7	10.0
Neoplasms and Endocrine	942.1	12.1	9.3	.6	951.4	10.2
Vitamins and Nutrients	373.7	4.8	569.6	36.9	943.3	10.1
Cardiovasculars	1,183.5*	15.2	1.5	.1	1,185.0	12.7
Respiratory System	482.7	6.2	248.5	16.1	731.2	7.8
Dermatologicals	163.5	2.1	185.2	12.0	348.7	3.7
Other	233.6	3.0	18.5	1.2	252.1	2.7
TOTAL	$7,786.2	100.0%	$1,543.7	100.0%	$9,329.9	100.0%

*Although sales for individual drugs in these categories did not vary extensively from 1978 to 1979, because of reclassification of some drugs the 1978 and 1979 figures are not comparable.

R & D Expenditures, Pharmaceuticals, 1977, 1978, 1979 (millions of dollars)

11

	1977		1978		1979	
	Amount	Change 1976-1977	Amount	Change 1977-1978	Amount	Change 1978-1979
Company-Financed, for Human-Use Pharmaceuticals:						
Amount spent in United States	$984.1	+ 9.0%	$1,089.2	+10.7%	$1,243.1	+14.1%
Amount spent in foreign countries ...	$197.7	+19.9%	$ 222.0	+12.3%	$ 279.8	+26.0%
Company-Financed, for Veterinary-Use Pharmaceuticals:						
Amount spent in United States	$ 68.9	− 3.5%	$ 69.9	+ 1.5%	$ 76.7	+ 9.7%
Amount spent in foreign countries ...	$ 15.4	no change	$ 15.9	+ 3.2%	$ 19.6	+23.3%

Domestic and Foreign Shares of Company-Funded R & D Expenditures 1973-79 (percentages)

12

R & D Expenditures, Human- and Animal-Use Pharmaceuticals	1973	1974	1975	1976	1977	1978	1979
Domestic	85.6%	84.2%	85.0%	84.4%	83.2%	83.0%	81.5%
Foreign	14.4	15.8	15.0	15.6	16.8	17.0	18.5
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

R & D Expenditures for Ethical Pharmaceuticals, Allocation of Funds (percentages) 1978, 1979 and 1980 (Budgeted)

Category of R & D Expenditures for Ethical Pharmaceuticals	1978	1979	1980
Company-Financed R & D Expenditures for Human-Use Products			
Percentage spent in the United States	77.58%	76.42%	75.98%
Within firm	66.19	66.28	65.15
Outside firm	11.39	10.14	10.83
Percentage spent in foreign countries	15.81	17.20	17.82
Within firm	14.10	15.54	15.96
Outside firm	1.71	1.66	1.86
TOTAL Human-Use R & D	93.39	93.62	93.80
Company-Financed R & D Expenditures for Veterinary-Use Products:			
Percentage spent in the United States	4.98	4.71	4.57
Within firm	4.44	4.26	4.18
Outside firm	.54	.45	.39
Percentage spent in foreign countries	1.13	1.20	1.26
Within firm	1.08	1.12	1.18
Outside firm	.05	.08	.08
TOTAL Veterinary R & D	6.11	5.91	5.83
TOTAL Company-Financed R & D	99.50	99.53	99.63
U.S. Government Grants and Contracts for Company-Conducted R & D	.50	.47	.37
TOTAL Expenditures for R & D	100.00%	100.00%	100.00%

Research by Geographic Area, 1979

- Over two-thirds or 72% of the research funds spent abroad were spent in Western Europe.
- The Far East accounted for 16% of foreign expenditures, Latin America for 6% and Canada for 5%.

Table 14

Distribution of R & D Expenditures Abroad by Geographic Area, 1979

14

Area	Percentage of Total
Canada	5.0%
Latin American (Central America, South America, Caribbean, excluding Cuba)	6.2
Western Europe (excluding Turkey, Yugoslavia and Albania; including Greece and Scandinavia)	71.8
Middle East and Africa	1.5
Far East and Pacific (from Pakistan to Pacific Islands, from Japan to New Zealand)	15.5
Socialist Bloc (including Eastern Europe, U.S.S.R., Yugoslavia, Albania, People's Republic of China, Laos, Cambodia and Vietnam)	–
TOTAL	100.0%

No firms responding to the survey indicated R & D expenditures in Socialist Bloc countries.

1979 Research and Development Allocation of Expenditures to New Product Research

- 82% of R & D funds are spent for research and development of new products; 18% goes for improvement of existing products.
- Abroad, the ratio of new product/existing product expenditures was 75.5/24.5, only slightly different from the 1978 ratio of 75.7/24.3.

Tables 15 and 16

Company-Financed R & D Expenditures in the United States, 1979 (percentages) 15

	Human- and Veterinary-Use R & D
Research for the Advancement of Scientific Knowledge and Development of New Products and Related Services	82.3%
Research Oriented to Significant Improvement and/or Modification of Existing Products	17.7
TOTAL	100.0%

Company-Financed R & D Expenditures in Foreign Countries, 1979 (percentages) 16

	Human- and Veterinary-Use R & D
Research for the Advancement of Scientific Knowledge and Development of New Products and Related Services	75.5%
Research Oriented to Significant Improvement and/or Modification of Existing Products	24.5
TOTAL R & D Abroad	100.0%

1979 Research and Development Allocation of Expenditures by Product Class

- Two-thirds of the funds again went to investigations related to infections, central nervous system, neoplasms and the heart.
- Anti-infective product research led with 19% of the total.
- Increases in 1979 went to anti-infectives, cardiovasculars, and dermatologicals.

Table 17

U.S. R & D Expenditures, Pharmaceuticals, by Product Class, 1978-1979* 17

Ranking 1978	Ranking 1979	Product Class	Percentage Share of R & D Dollar 1978	Percentage Share of R & D Dollar 1979
1	1	Anti-infectives	18.3%	18.7%
3	3	Central Nervous System and Sense Organs	16.9	16.3
2	2	Cardiovasculars	17.3	18.6
4	4	Neoplasms, Endocrine System and Metabolic Diseases	16.1	15.3
5	5	Gastrointestinal and Genitourinary System	6.7	6.3
6	6	Respiratory	4.4	4.0
8	7	Biologicals	3.0	2.5
7	8	Dermatologicals	2.8	2.9
9	9	Vitamins	2.2	2.5
10	10	Diagnostic (in vivo)	.6	.5
		Other	5.6	6.7
		Veterinary Preparations	5.7	5.3
		Veterinary Biologicals	.4	.4
			100.0%	100.0%

*Same companies, 1978 and 1979.

R & D Expenditures Abroad, Pharmaceuticals, by Product Class, 1978-1979*

18

Ranking 1978	Ranking 1979	Product Class	Percentage Share of R & D Dollar 1978	1979
1	1	Anti-infectives	24.7%	24.5%
2	2	Cardiovasculars	23.0	19.7
3	3	Central Nervous System and Sense Organs	12.3	13.3
4	5	Gastrointestinal and Genitourinary System	10.3	7.6
5	4	Neoplasms, Endocrine System and Metabolic Diseases	8.3	10.6
6	6	Respiratory	2.7	3.9
7	7	Dermatologicals	2.2	2.4
8	8	Biologicals	1.4	1.9
9	9	Vitamins	.7	1.0
10	10	Diagnostics (in vivo)	.1	.3
		Other	7.2	6.6
		Veterinary Preparations	7.1	8.2
		Veterinary Biologicals	.0	.0
			100.0%	100.0%

*Same companies, 1978 and 1979.

1979 Research and Development Allocation Expenditures by Function

- Over half of all R & D expenditures is allocated to Biological Screening and Pharmacological Testing, Clinical Evaluation, and Synthesis and Extraction.
- The largest share, 18%, is spent on Biological Screening and Pharmacological Testing.

Table 19

Distribution of U.S. R & D Expenditures for Ethical Pharmaceuticals by Function, 1979

19

Function	Percentage of Total
Biological Screening and Pharmacological Testing	18.2%
Clinical Evaluation: Phases I, II, III	17.1
Synthesis and Extraction	15.6
Pharmaceutical Dosage Formulation and Stability Testing	9.2
Toxicology and Safety Testing	9.6
Process Development for Manufacturing and Quality Control	8.8
Clinical Evaluation: Phase IV	5.0
Regulatory, IND and NDA Preparation, Submission and Processing	3.6
Bioavailability Studies	2.1
Other	10.8
TOTAL	100.0%

1979 Research and Development/Sales Ratio

- The percentage of the domestic pharmaceutical sales dollar allocated to domestic R & D remained stable at 11.5%, the same as for the past three years.

Table 20

R & D as a Percentage of Sales, Ethical Pharmaceuticals, 1974-1979* **20**

Year	1974	1975	1976	1977	1978	1979	Annual Average 1974-1979
Ratio . . .	11.7	11.6	11.5	11.5	11.5	11.5	11.5%

*Human and veterinary ethical pharmaceuticals. R & D is domestic U.S. only as financed by companies for internal and external performance. Sales basis: Domestic sales plus exports to other firms and intrafirm exports but excluding sales of foreign plants owned by U.S. firms. For this special analysis, only data from companies furnishing complete R & D and sales information were used. There were 41 companies that responded to both the sales and R & D surveys for 1979.

Glossary

Definitions used in the 1979-1980 Survey

Biologicals—bacterial and virus vaccine, antigens, antitoxins, toxoids, and analogous products (such as allergenic extracts) serums, plasmas, and other blood derivatives for human use.

Bulk—For use as a pharmaceutical or medicinal product in further manufacture or in packaging by another company, or for processing in animal feeds (but not as nutritional ingredients), or in prescription compounds, etc.

Company or Firm—Manufacturers including parent, affiliated and subsidiary companies, without duplication engaged in production of ethical pharmaceuticals, biologicals, diagnostic products and medical devices.

Diagnostic Agents (in vivo)—Diagnostic products used in living body.

Diagnostic Products (in vitro)—Those reagents, instruments, and systems intended for use in the diagnosis of disease or in the determination of the state of health in order to cure, mitigate, treat or prevent disease or its sequelae. Such products are intended for use in the collection, preparation and examination of specimens taken from the human body.

Ethical Pharmaceuticals—Products, including biologicals and medicinal chemicals, used for the cure, alleviation, mitigation, treatment, prevention or diagnosis of disease in humans or animals and promoted primarily to the medical, pharmacy and allied professions; includes products for over-the-counter ethical sales as well as for ultimate dispensing by prescription only.

Exports—*"F.O.B.,"* U.S. port.

a) To other firms: sales to third parties only.
b) Intrafirm transactions: sales and shipments at billed (not end sales) value to subsidiaries and affiliates for further handling, processing or packaging.

Government Grants and Contracts for Company-Conducted R&D—Grants and contractual payments received by companies from governmental agencies for pharmaceutical research and development.

Over-the-Counter Ethical—A drug product sold over the counter but primarily promoted to the professions.

Prescription Legend—A drug product which by Federal law is available only by prescription by a licensed physician.

Research and Development—The term includes basic and applied research as well as development activities carried on or supported in the pharmaceutical, biological, chemical, medical and related sciences, including psychology and psychiatry, if the purpose of such activities is concerned ultimately with the utilization of scientific principles in understanding diseases or in improving health.

R&D Expenditures—The total cost incurred for all pharmaceutical research and development activity, including cost of salaries, other direct costs, service, routine supplies, and supporting costs, plus a fair share of overhead (administration, depreciation, space charges, rent, etc.).

Cost of drugs or medical research and development conducted on grant or contract for other companies are excluded. Conversely, total outlays for all research and development work contracted to others (manufacturers, independent research laboratories, academic institutions, etc.), are included.

Research and Development Expenditures Within Firm—Includes research and development expenditures in the United States and foreign countries in a firm's own research laboratories.

Research and Development Expenditures Outside Firm—Research and development funds contracted or granted to such organizations as commercial laboratories, private practitioners, consultants, etc., educational institutions, non-profit research institutions, manufacturing and other companies or other research performing organizations.

Sales—Sales figures are reported as billed (before deducting cash discounts on sales and other marketing expenses), less returns and allowances. Includes sales value of products bought and resold without further processing or repackaging as well as the dollar value of products made from own materials for other manufacturers' resale. Excluded are all royalty payments, interest and other income.

Sales Abroad—Actual sales consummated in foreign countries other than "Sales for Exports to Other Firms." Such sales by affiliates and subsidiaries or other operations abroad reported in dollars, computed at December 31, 1979 rate of exchange (when possible). Where a partially owned subsidiary is involved, the firm's share is determined on a proportionate profit-sharing basis.

Sales for Export—Reported as *"f.o.b. U.S. port."*

1. *To Other Firms*—excludes intracompany transactions, includes sales to third parties only.
2. *Intracompany Transactions*—includes sales and shipments to subsidiaries or affiliates for further handling, processing, or finishing by them. Reported as net billed value, not end sales values.

Sales by Product Class—Estimated distribution of domestic sales of ethical pharmaceutical and biological dosage-form preparations in accordance with the classification system used in the Annual Census "Value of Shipments of Pharmaceutical Preparations" (with the exception of "biologicals" and "diagnostic agents").

Sales to Governments—Sales or shipments made directly to federal, state or local government agencies, hospitals and clinics.

Sales to Private Sector—Sales through regular marketing channels for end-use other than by government agency administration or distribution.

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